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Nonprovisional Patent Application of

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for

TITLE: ANIMAL CHEW TOY

15 **CROSS-REFERENCE TO RELATED APPLICATION**

This application claims the benefit of U.S. Provisional
Patent Application Ser. No. 60/491,880, to Christopher Alan
Weinberg, entitled, "ANIMAL CHEW TOY," filed August 1,
2003, the disclosure of which, including all attached
20 documents, is hereby incorporated by reference herein, in
its entirety, for all purposes.

FIELD OF THE INVENTION

The present invention relates to animal chews and
25 particularly to animal chew toys having an animal hide
enclosing a filling.

BACKGROUND

Presently, commercial pet chew toys, particularly those for
30 dogs, are designed to exercise the jaw muscles of a pet and

through prolonged mastication, work to clean the teeth and gums. For many dogs, these dry and often tasteless products are unappealing, and as a result, are not used or used very little and accordingly fail to provide up to
5 their full potential for pet exercise and pet teeth cleaning potential.

Chew toys for dogs include those that incorporate a meat and rawhide formulation as part of the manufacturing
10 process. For example, some chew toys are filled rawhide products with meat content. Unfortunately, as the meat content increases, the chew toy serves more as a food delivery system than as a toy to satisfy the chewing
15 instinct while offering only a minimal ability to clean the teeth and gums. Other chew toys utilize a process whereby a flat, jerked piece of meat is inserted along the seam of the rawhide chew with the jerked meat making the rawhide
20 chew more appealing for dogs to chew and thereby exercise and clean their teeth and gums. Unfortunately, because the jerked meat is not anchored or affixed to the rawhide, when a dog begins to chew on the item, the dog easily removes the jerked meat from the seam of the product and thereafter
25 abandons the rawhide chew casing. There remains a need for a chew toy having a sturdy casing with an appealing filling that remains well anchored throughout the life of the chew toy.

SUMMARY

This application discloses an improved chew toy treat
30 including constituent elements such as an outer casing,

preferably made of pork hide, bovine rawhide and other animal hides or simulated hides that are particularly appealing to dogs. The invention is manufactured in a variety of shapes, such as rolls, twists, bones, sticks, pressed bones, pressed rolls, pressed twists, ear shapes, chicken wing shapes, and any other shapes that can be made from the pork hide and bovine rawhide and other animal hide and simulated hide materials.

- 10 In the several embodiments of the present invention, the center of the chew contains one of several inner fills that are manufactured through an extrusion process. The preferred fillings include a dry meat filling preferably having less than 25% meat, a wheat gluten, mint and parsley filling, and a wheat gluten and dry vegetable filling.

The present invention in its several embodiments offers several advantages over other chew products. Some of the advantages include: minimal contact staining; longer pet interest due to an anchored fill; flavor enhanced fillings, and fillings with nutritional supplements. Fillings are known to have colors that may transfer on contact. The fillings of the present invention are located substantially within the middle of the chew and, although exposed, if the chew is dropped during use while the casing is intact and if the chew lands in a stable position, the filling does not remain in contact with carpet or flooring. The fillings of the several embodiments of the present invention are affixed substantially within the middle of the chew and, accordingly, the dog cannot easily remove the inner

filling. Thus, the dog is incentivized to chew and thereby exercise its teeth and gums for longer time periods on the casing while being attracted to the filling. Because the preferred fillings are blended mixtures of ingredients,
5 they have the capacity of being enhanced with natural flavor in order to increase the product sensory appeal to the dog and with the increased flavor thereby causing the dog to more vigorously chew. Fillings of the present invention may include, in alternative embodiments, one or
10 more nutritional supplements (e.g., multi-vitamin, minerals, omega-3, and glucosamine).

BRIEF DESCRIPTION OF THE DRAWINGS

For a further understanding of the nature and objects of the present invention, reference should be made to the
15 following detailed description, taken in conjunction with the accompanying drawings, in which like elements are given the same or analogous reference numbers and wherein:

20 FIG. 1 is a flowchart of the overall process of the present invention;

FIG. 2A is a top view of a filled expanded rawhide twist, having a filling, in accordance with a preferred embodiment
25 of the present invention;

FIG. 2B is a perspective view of an expanded rawhide twist, having a filling, in accordance with a preferred embodiment of the present invention;

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FIG. 3 is a perspective view of a filled natural rawhide twist, having a filling, in accordance with a preferred embodiment of the present invention;

5 FIG. 4 is a perspective view of a mesquite-smoked, rawhide twist, having a filling, in accordance with a preferred embodiment of the present invention;

FIG. 5 is a perspective view of a mesquite-smoked, knotted
10 rawhide bone-shaped twist, having a filling, in accordance with a preferred embodiment of the present invention;

FIG. 6A is a top view of a savory-bacon coated, rawhide twist, having a filling, in accordance with a preferred
15 embodiment of the present invention;

FIG. 6B is a perspective view of a savory-bacon coated, rawhide twist, having a filling, in accordance with a preferred embodiment of the present invention;

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FIG. 7A is a perspective view of a rawhide pressed bone, having a filling, in accordance with a preferred embodiment of the present invention;

25 FIG. 7B is an alternate perspective view of a rawhide pressed bone, having a filling, in accordance with a preferred embodiment of the present invention;

FIG. **8A** is a top view of rawhide pressed stick, having a filling, in accordance with a preferred embodiment of the present invention;

- 5 FIG. **8B** is a perspective view of rawhide pressed stick, having a filling, in accordance with a preferred embodiment of the present invention; and

- FIG. **9** is a layered cutaway view of the rawhide pressed
10 stick, having a filling, in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION

- 15 The invention, in its several embodiments, is described below together with figures herein referenced and incorporated by reference in this disclosure.

- An overview of the process of making the animal chew toy is
20 illustrated in FIG. **1**. The process **100** involves two concurrent or roughly parallel subprocess paths: the hide or casing preparation **102** and the inner filling preparation **104**. In the inner filling preparation **116**, alternative
25 embodiments of the present invention include a rod of extruded, dried products, e.g., meat, vegetables, or wheat-mint-parsley, that have been shown to be very appealing to dogs where the rod is highly flavored, and appetizing to the pet, that, as a fill product or filling, is placed in the center of the chew during manufacturing. The extrusion
30 process is comprised of a mass containing the constituent

ingredients that is ground to an extremely smooth consistency, a consistency comparable for example to that of bread dough or paste. The filling as a paste is then forced through a die under pressure, creating one of
5 several shapes including for example flat strips, round sticks and other shapes appropriate for the inner filling of the chew toy embodiments of the present invention. In its several embodiments, this rod is a strip, a plug or a piece. Depending on the desired chew toy product, the
10 filling piece may be shaped in various ways to accommodate the type of product being manufactured.

In the hide preparation subprocess **102**, the initial hide treatment includes a defatting and depilation treatment
15 **110**. Included in this step is the splitting of the hide to obtain successive layers of rawhide materials and the rinsing and sun-drying of the layers of hide. An additional step in the finishing process may in some embodiments be applied to make the hide appear thicker **112**. This
20 alternative step **112** involves expanding the hide, using a combined solution of fresh water and hydrogen peroxide for a period of time. Preferably, the hydrogen peroxide to water is 20 percent by volume and the exposure of the hide layer to the solution is approximately four hours.

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Depending upon the type of chew being manufactured, the finished hide is cut into various sizes of pieces, strips, or shreds and moisture is added in order to make the product pliable for further processing (step **114**). Once an
30 inner filling is prepared (step **116**), it is extruded **118**

and combined **120**. Depending of the shape of the chew, that is, depending on the mode of shaping, there is alternatively a step of pressing **122**, twisting **126** or knotting **124**. Thereafter, oven-drying **128** is used to finish
5 the product. In some alternative embodiments, if overcoating is desired **130**, a smoking and/or dipping and drying step **132** is included to finish the product.

For example, in manufacturing the chew having a twist
10 shape, long strips of porkhide or bovine rawhide and other animal hides or simulated hides that are particularly appealing to dogs are twisted together preferably with a rod of hot or cold extruded meat, vegetable, or wheat gluten-mint-parsley in the middle, to a length of
15 approximately 6 feet and secured on a rack. These racks are then placed in a low temperature oven at approximately 40 degrees centigrade for approximately 3-4 days to dry very slowly from the inside out. When fully dry, about 5-7% moisture by weight, the 6-foot length is removed and cut
20 into shorter lengths of from 4 inches up to 10 inches, for example.

FIG. **2A** illustrates a top view of an expanded rawhide twist **201** and FIG. **2B** illustrates a perspective view of the
25 expanded rawhide twist **201** illustrating it having a filling **202**. The twist is made preferably of a pork or bovine rawhide and other animal hides or simulated hides that are particularly appealing to dogs **203**, which is formed into a twist shape. The expanded rawhide twist **201** makes the hide
30 **203** appear thicker. The expanded rawhide twist **201** encases

a filling **202** which can be hot or cold extruded meat, vegetable or wheat-gluten-mint-parsley, for example. Such twists may, as an alternative, not employ the expansion step and accordingly appear more compact as in FIG. **3** that illustrates a perspective view of a natural rawhide twist **301** having a filling **202**. Like the expanded rawhide, the natural rawhide twist may be made preferably of a pork or bovine rawhide and other animal hides or simulated hides that are particularly appealing to dogs **203**, which is formed into a twist shape. As with the expanded hide, the natural rawhide twist encases a filling **202** which can be hot or cold extruded meat, vegetable or wheat-gluten-mint-parsley.

FIG. **4** illustrates a perspective view of a mesquite-smoked, pork hide twist **401** having a filling **202**. The twist is made preferably of a mesquite-smoked, pork hide **403**, which is formed into a twist shape having more turns and a rolling angle steeper than those previously illustrated. As is the case with the expanded and natural hides, the twist encases a filling **202** which can be hot or cold extruded meat, vegetable or wheat-gluten-mint-parsley.

FIG. **5** illustrates a perspective view of a mesquite-smoked, knotted pork hide bone-shaped twist **501** having a filling **202**. Preferably, the knot is produced through a hand-tying process or a mechanized equivalent. During this process, a filling **202** is extruded into a long, flat strip or rod. The flat strip is cut to length and placed from end to end, in the middle of the rectangular piece of pork hide or

bovine rawhide and other animal hides or simulated hides that are particularly appealing to dogs **203**. After placement of the fill strip **202**, the hide **203** is folded, length wise and knotted at both ends.

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FIG. **6A** illustrates a top view of a savory-bacon coated, pork hide twist **601**. The shape of the expanded twist is maintained. FIG. **6B** illustrates a perspective view of a savory-bacon coated, pork hide twist **601** having a filling **202**. The twist is made preferably of a savory-bacon coated, pork hide **602**, which is formed into a twist shape. As with the twists without coatings, this twist encases a filling **202** which can be hot or cold extruded meat, vegetable or wheat-gluten-mint-parsley.

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FIG. **7A** illustrates a perspective view of a rawhide pressed bone **701** having a filling or plug **202**. The bone is made preferably of pork or bovine rawhide and other animal hides or simulated hides that are particularly appealing to dogs **203**, which is formed into a bone shape. The rawhide pressed bone **701** encases a filling or plug **202** which can be hot or cold extruded meat, vegetable or wheat-gluten-mint-parsley. FIG. **7B** illustrates in an alternate perspective view of a rawhide pressed bone **701** having a filling or plug **202**. In the manufacture of the pressed bone, the inner plug **202** of hot or cold extruded meat, vegetable, or wheat gluten-mint-parsley is wrapped around the outside by a piece of pork hide or bovine rawhide and other animal hides or simulated hides that are particularly appealing to dogs **203**, where the ends of the plug remaining exposed. The

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wrapped plug is placed in a high-pressure, preferably metal, die press and pressed into the desired shape. This embodied product is also dried in an oven to the necessary moisture level. This process can be used to make pressed
5 shapes other than bones including pressed twists, pressed sticks, pressed rib bones, pressed chicken wings, and various other shapes.

FIG. **8A** illustrates a top view of a rawhide pressed stick
10 **801** and FIG. **8B** illustrates a perspective view of a rawhide pressed stick **801** having a filling **202**. The stick is made preferably of pork or bovine rawhide and other animal hides or simulated hides that are particularly appealing to dogs **203**, which is formed into a stick shape. As with other
15 embodiments, the rawhide pressed stick **801** encases a filling **202** which can be hot or cold extruded meat, vegetable or wheat-gluten-mint-parsley. FIG. **9** illustrates a layered cutaway view of a rawhide pressed stick **801** having a filling **202**.

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Inner Filing

The inner fill **202** of the chew embodiments described are
25 preferably filled with one of the following: a dry meat product, containing less than 25% meat; a wheat gluten, mint and parsley product; or a wheat gluten, dry vegetable product.

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Example 1

Ingredients and preparation of the dry meat product containing less than 25% meat are illustrated by example as follows in Table I.

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TABLE I

Ingredients	Percentage by weight
Beef	28-30%
Wheat Flour	15-17%
Soy Flour	14-15%
Wheat Middlings	10-12%
Corn Syrup	5-7%
Wheat Gluten	5-7%
Corn Starch	4-6%
Sugar	3-5%
Propylene Glycol	3-5%
Salt	Less than 1%
Caramel Color	Less than 1%
Phosphoric Acid	Less than 1%
Animal Fat	Less than 1%
Potassium Sorbate	Less than 1%
Garlic Powder	Less than 1%
Onion Extract	Less than 1%
Bone Phosphate	Less than 1%
Natural Smoke Flavor	Less than 1%
BHA(Used as a preservative)	Less than 1%

10 In preparation, the beef is thawed and ground into one-quarter inch pieces. After grinding, the meat is

preferably placed in a horizontal bowl cutter and cut into a smooth paste. Upon completion, the beef and all other ingredients are placed in a horizontal mixer and blended for until smooth. The mixture is then preferably placed
5 into a hot extrusion machine where the formula is again blended and heated to a temperature of 105 degrees centigrade. The mixture passes through a stainless steel tube containing a corkscrew-shaped stainless steel shaft located inside the stainless steel tube. The stainless
10 steel tube and stainless steel shaft create a sustained pressure behind the mixture, which is forced through a template that produces a flat strip or round stick. The extrusion then passes through an oven and is dried at 85 degrees centigrade for approximately 2 hours until the
15 moisture content of the extrusion is reduced to 24%. The product is then cooled, vacuum packaged, and stored at room temperature.

Example 2

20 Ingredients and preparation of the wheat gluten, mint and parsley product are illustrated by example as follows in Table II.

TABLE II

Ingredients	Percentage by weight
Gluten	28-30%
Glycerine	12-14%
Rice Flour	12-14%
Sweet Rice Flour	11-13%

Deionized Water	11-13%
Chicken Meal	8-11%
Gelatin	6-8%
Lecithin	Less than 1%
Sodium Diacetate	Less than 1%
Fennel Seed Powder	Less than 1%
Dill Seed Powder	Less than 1%
Sodium Tripolyphosphate	Less than 1%
Chlorophyll	Less than 1%
Peppermint Oil	Less than 1%
Parsley Herb Oil	Less than 1%

In preparation, all of the above ingredients are placed in a horizontal mixer and blended until smooth. The mixture is then placed into the hot extrusion machine where the

5 formula is again blended and heated to a temperature of approximately 105 degrees centigrade. The mixture passes through a stainless steel tube containing a corkscrew-shaped stainless steel shaft located inside the stainless steel tube. The stainless steel tube and stainless steel

10 shaft create a sustained pressure behind the mixture, which is forced through a template that produces a flat strip or round stick. The extrusion then passes through an oven and is dried at approximately 85 degrees Centigrade for

15 extrusion is reduced to approximately 24%. The product is then cooled, vacuum packaged, and stored at room temperature.

Example 3:

Ingredients and preparation of the wheat gluten and dry vegetable product are illustrated by example as follows in Table III.

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TABLE III

Ingredients	Percentage by weight
Wheat Gluten	44-46%
Glycerine	22-24%
Powdered Dehydrated	19-21%
Vegetables (including carrots, potatoes, celery, beets, parsley, watercress, and spinach)	
Deionized Water	4-6%
Gelatin	3-5%
Lecithin	Less than 1%
Sodium Diacetate	Less than 1%
Fennel Seed Powder	Less than 1%
Dill Seed Powder	Less than 1%
Sodium Tripolyphosphate	Less than 1%

In preparation, all of the above ingredients are placed in a horizontal mixer and blended for approximately 10 minutes, until smooth. The mixture is then placed into the hot extrusion machine where the formula is again blended and heated to a temperature of approximately 105 degrees centigrade. The mixture passes through a stainless steel tube containing a corkscrew-shaped stainless steel shaft located inside the stainless steel tube. The stainless

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steel tube and stainless steel shaft create a sustained pressure behind the mixture, which is forced through a template that produces a flat strip or round stick. The extrusion then passes through an oven and is dried at approximately 85 degrees centigrade for approximately 2 hours, until the moisture content of the extrusion is reduced to approximately 24%. The product is then cooled, vacuum packaged, and stored at room temperature.

- Further processing optionally includes utilizing a natural mesquite smoking process, as well as flavor coating the entire product. Additionally, any of the above chews can be dipped in liquid gluten derived from pork hide or bovine rawhide **203**. The liquid gluten enhances the durability of the chew by providing an additional, hard outer layer.

Some of the embodiments of the present invention include a savory smoked bacon flavor (FIG. **6B**) coating made of the following ingredients in Table IV.

TABLE IV

Ingredients	Percentage by weight
Beef	49-51%
Natural Molasses	17-19%
Liquid Smoke	11-3%
Soy Protein	7-9%
Wheat Gluten	5-6%

Propylene Glycol	5-6%
Beef Marrow	Less than 1%
Brewers Yeast	Less than 1%

In preparation, fresh beef or thawed frozen beef is ground into one-quarter inch pieces. The meat is blended in a horizontal mixer with the natural molasses, liquid smoke, 5 soy protein, wheat gluten, propylene glycol, beef marrow and brewers yeast. After mixing the formulation is then passed through an emulsifier for a finer degree of grinding. This fine ground emulsion is placed in a reactor vessel, where it is stirred and heated to approximately 70 10 degrees centigrade for approximately one hour. After cooling the mixture is again emulsified to a finer degree and returned to the reactor vessel, where it is stirred and heated to approximately 85 degrees centigrade for approximately one hour. The pH of the mixture is adjusted 15 to approximately 3.0. Finally the product is cooled, packaged in sterile drums, and stored at room temperature.

An improved animal chew toy is described above. Various details of the invention may be changed without departing 20 from its scope. Furthermore, the foregoing description of the preferred embodiment of the invention and best mode for practicing the invention are provided for the purpose of illustration and not for the purpose of limitation. Many alterations and modifications may be made by those having 25 ordinary skill in the art without departing from the spirit and scope of the invention. The words used in this specification to describe the invention in its several

embodiments are to be understood not only in the sense of their commonly defined meanings, but to include by special definition in this specification structure, material or acts beyond the scope of the commonly defined meanings.

5 Thus if an element can be understood in the context of this specification as including more than one meaning, then its use in a claim must be understood as being generic to all possible meanings supported by the specification and by the word itself. The definitions of the words or elements of
10 the following claims are, therefore, defined in this specification to include not only the combination of elements which are literally set forth, but all equivalent structure, material or acts for performing substantially the same function in substantially the same way to obtain
15 substantially the same result. In addition to the equivalents of the claimed elements, obvious substitutions now or later known to one with ordinary skill in the art are defined to be within the scope of the defined elements. The claims are thus to be understood to include what is
20 specifically illustrated and described above, what is conceptually equivalent, what can be obviously substituted and also what essentially incorporates the essential idea of the invention. Therefore, it must be understood that the illustrated preferred and alternative embodiments have been
25 set forth only for the purposes of example and that it should not be taken as limiting the invention as defined by the following claims.